# Catalyst 6500 Series Supervisor Engine 1A DRAM Upgrade Installation Note

**Part Number: MEM-S1-128MB=**

The MEM-S1-128MB= memory upgrade kit consists of 2 64-MB dynamic random-access memory (DRAM) dual inline memory modules (DIMMs). The memory upgrade kit upgrades the total supervisor engine memory from 64 MB (2 32-MB DIMMs) to 128 MB (2 64-MB DIMMs).

This publication describes how to remove and install the DRAM DIMMs on the following Catalyst 6500 series supervisor engines:

- WS-X6K-S1A-MSFC2
- WS-X6K-SUP1A-PFC
- WS-X6K-SUP1A-2GE

**Note** The WS-X6K-SUP1A-2GE shipped since June 2004 has 128 MB installed as default. Enter the **show version** *mod* command to display the total DRAM installed on the supervisor engine.

- WS-X6K-SUP1A-MSFC—See the following Note statements for information about the MEM-S1-128MB-UPG= upgrade kit for the WS-X6K-SUP1A-MSFC.

**Note** With the exception of WS-X6K-SUP1A-MSFC, all other Supervisor Engine 1A modules can upgrade to 128-MB DRAM using the MEM-S1-128MB= upgrade kit. To upgrade to 128-MB DRAM on the WS-X6K-SUP1A-MSFC, use the MEM-S1-128MB-UPG= upgrade kit *which also includes* an MSFC2 upgrade.

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**Note** The DRAM DIMMs on the Supervisor Engine 1A with an MSFC (WS-X6K-SUP1A-MSFC) are located beneath the MSFC. The MSFC is not field replaceable. Re-installing the MSFC could damage your supervisor engine. To upgrade the DRAM, you must also upgrade the MSFC to an MSFC2. Both upgrades are available in the MEM-S1-128MB-UPG= upgrade kit.

For information on removing the MSFC, refer to the *Catalyst 6500 Series Multilayer Switch Feature Card 2 Installation Note* at this URL:

http://www.cisco.com/univercd/cc/td/doc/product/lan/cat6000/cfgnotes/78_10605.htm

# Contents

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# Memory Recommendations and Requirements

See Table 1 for memory recommendations and requirements.

***Table 1 Memory Recommendations and Requirements***

| Catalyst Software Release | Memory Recommendation/Requirement |
|---|---|
| 6.x | With Catalyst software releases 6.x, your Supervisor Engine 1A configuration is fully supported with 64-MB DRAM. |

*Table 1 Memory Recommendations and Requirements (continued)*

| Catalyst Software Release | Memory Recommendation/Requirement |
|---|---|
| 7.x | With software releases 7.5(1) and later, 64-MB DRAM may not provide adequate free memory for all configurations. With large, existing configurations using many features, or when enabling new features available in release 7.5 and later, 64-MB DRAM might not be enough memory. We recommend upgrading to 128-MB DRAM to ensure that adequate free memory is available to the system at all times. |
| | Software release 7.6(4) and later 7.6(x) releases are too large to fit in the 64-MB DRAM that originally shipped on some Supervisor Engine 1A modules. You must upgrade to 128-MB DRAM. |
| 8.x | With Catalyst software releases 8.1(1) and later, your Supervisor Engine 1A configuration requires 128-MB DRAM. |

**Caution** The supervisor engine is a required system component. If only one supervisor engine is present, removing it while the system is operating causes the system to halt.

# Safety Overview

Safety warnings appear throughout this publication in procedures that may harm you if performed incorrectly. A warning symbol precedes each warning statement.

**Warning** **IMPORTANT SAFETY INSTRUCTIONS**

**This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device.** Statement 1071

**SAVE THESE INSTRUCTIONS**

**Warning** **Only trained and qualified personnel should be allowed to install, replace, or service this equipment.** Statement 1030

**Warning** **Hazardous voltage or energy is present on the backplane when the system is operating. Use caution when servicing.** Statement 1034

**Warning** **Blank faceplates and cover panels serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place.** Statement 1029

# Required Tools

These tools are required to upgrade the supervisor engine DRAM:

- Antistatic mat or foam pad to support the removed supervisor engine
- 3/16-inch flat-blade screwdriver for the captive installation screws on the supervisor engine
- Number 1 Phillips-head screwdriver for the screws and cap nut that fasten the MSFC2 to the supervisor engine (if an MSFC2 is installed on the supervisor engine)
- Your own ESD-prevention equipment or the disposable grounding wrist strap included with all upgrade kits, field-replaceable units (FRUs), and spares

Refer to the *Catalyst 6500 Series Switch Installation Guide* for the locations of the ESD connectors on the Catalyst 6500 series switches.

# Removing the MSFC2

**Note** If upgrading a supervisor engine without an MSFC2 (WS-X6K-SUP1A-PFC or WS-X6K-SUP1A-2GE), proceed to the "Upgrading the DRAM DIMM" section on page 7 to install the DRAM.

**Note** The DRAM DIMMs on the Supervisor Engine 1A with an MSFC (WS-X6K-SUP1A-MSFC) are located beneath the MSFC. The MSFC is not field replaceable. Re-installing the MSFC could damage your supervisor engine. To upgrade the DRAM, you must also upgrade the MSFC to an MSFC2. Both upgrades are available in the MEM-S1-128MB-UPG= upgrade kit.

For information on removing the MSFC, refer to the *Catalyst 6500 Series Multilayer Switch Feature Card 2 Installation Note* at this URL:

http://www.cisco.com/univercd/cc/td/doc/product/lan/cat6000/cfgnotes/78_10605.htm

**Caution** Always use an ESD wrist strap when handling modules or coming into contact with internal components.

Before you remove the supervisor engine, you should first upload the current configuration to a server. You can recover the configuration by downloading it from the server to the nonvolatile memory of the supervisor engine. For more information, refer to Chapter 26, "Working with Configuration Files," in the *Catalyst 6500 Series Software Configuration Guide*.

The DRAM is located beneath the MSFC2. To upgrade the supervisor engine, you must remove the MSFC2 from the supervisor engine.

To remove the MSFC2 from the supervisor engine, follow these steps:

**Step 1** Upload the current configuration to a server. On any modules running Cisco IOS software, save the running configuration.

**Step 2** Remove the supervisor engine from the Catalyst 6500 series switch. (Refer to the *Catalyst 6500 Series Module Installation Guide* for removal instructions.)

**Step 3** Place the supervisor engine on an antistatic mat or foam.

**Step 4** Remove the securing screws and cap nut that secure the MSFC2 to the supervisor engine. (See Figure 1 for an MSFC2 shipped before November 2001, or see Figure 2 for an MSFC2 shipped after November 2001.)

**Note** The MSFC2 shipped after November 2001 is physically smaller than the previous MSFC2 and is not secured with a cap nut. (See Figure 2.)

***Figure 1 MSFC2 Shipped Before November 2001—Removing Securing Screws and Cap Nut***

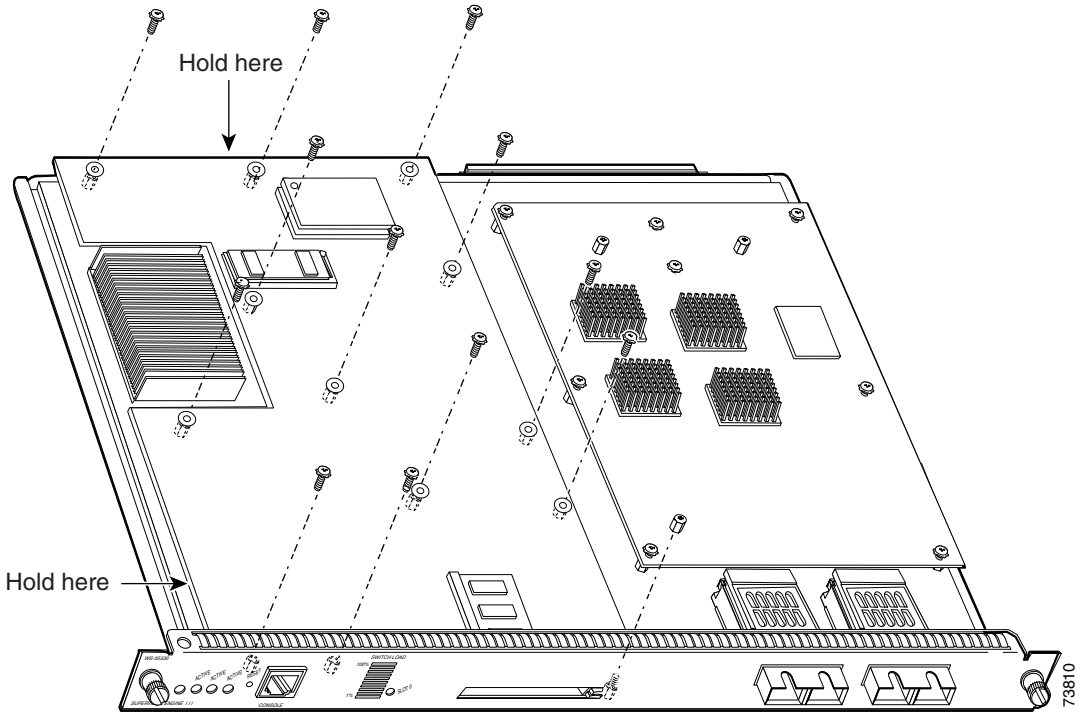
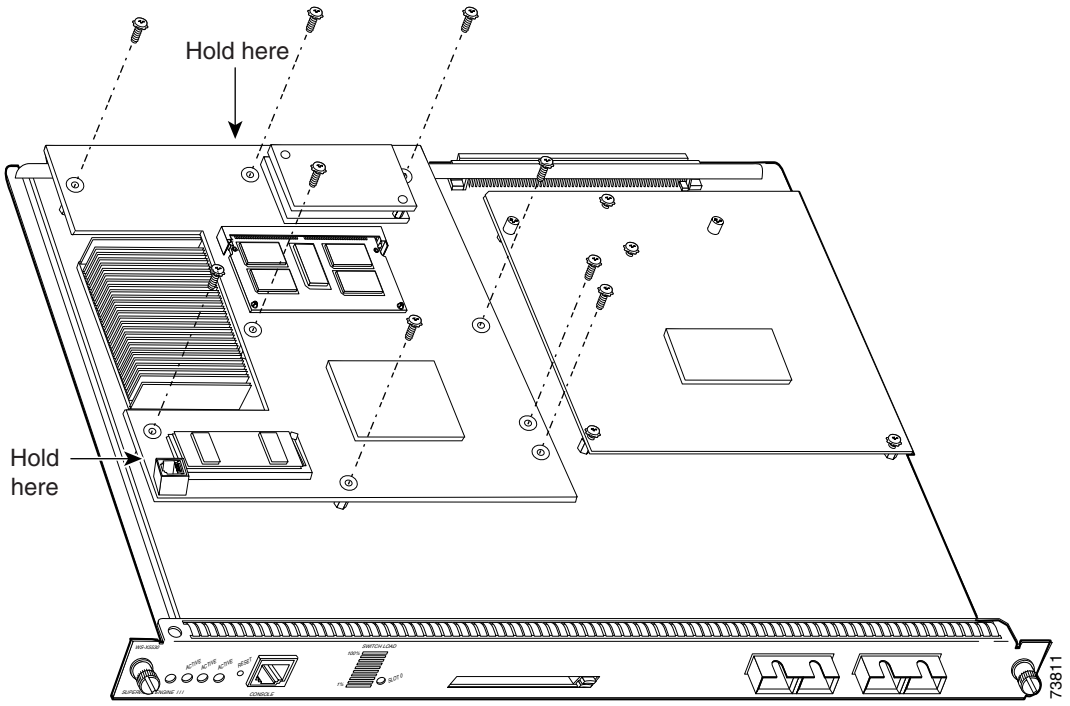


*Figure 2 MSFC2 Shipped After November 2001—Removing Securing Screws*




**Step 5** Hold the top edge of the MSFC2 with your right hand and the bottom-left edge with your left hand. (See Figure 1 for an MSFC2 shipped before November 2001 or Figure 2 for an MSFC2 shipped after November 2001.) Gently lift the MSFC2 with both hands simultaneously, and remove the MSFC2 from the supervisor engine.

**Caution** Use care not to damage the connectors on the supervisor engine. If you damage a connector, you will have to return the supervisor engine to Cisco for repair.

**Step 6** Place the MSFC2 on an antistatic mat or antistatic foam pad.

Proceed to the "Upgrading the DRAM DIMM" section on page 7 to install the DRAM.

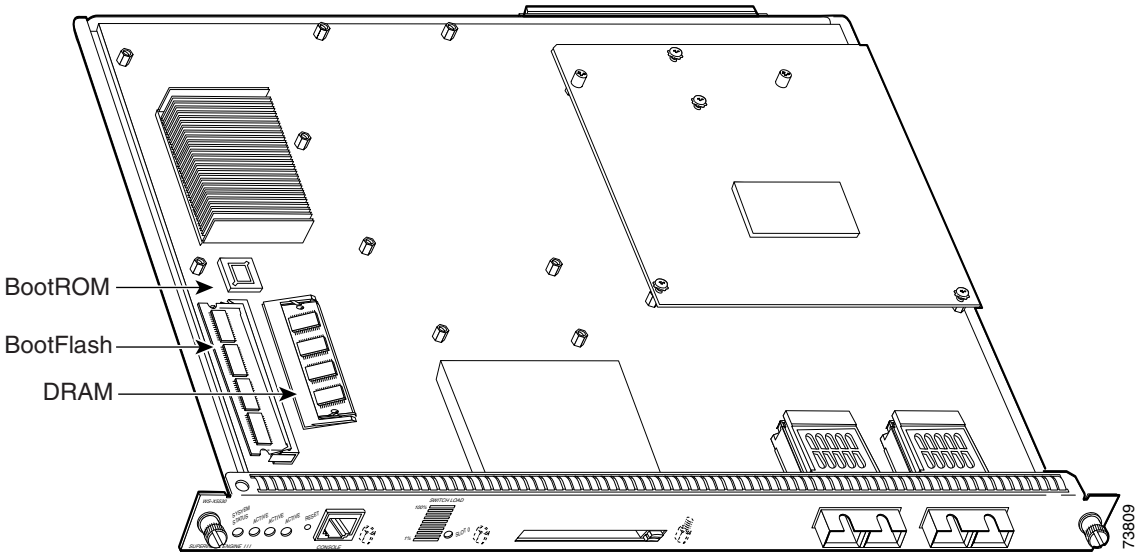
# Upgrading the DRAM DIMM

**Warning** **During this procedure, wear grounding wrist straps to avoid ESD damage to the card. Do not directly touch the backplane with your hand or any metal tool, or you could shock yourself.**

This section describes how to remove the existing DIMMs and replace them with the upgrade DIMMs. The DRAM DIMM location is shown in Figure 3.

**Note** The Supervisor Engine 1A DRAM uses two DIMMs, one stacked on top of the other.

***Figure 3 DRAM Location***



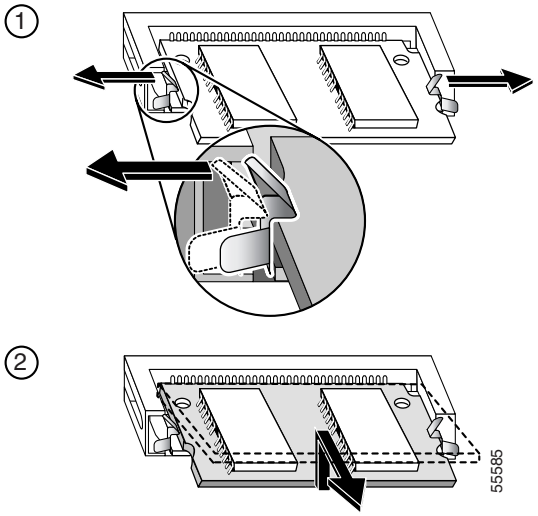

**Caution** Always use an ESD wrist strap when handling modules or coming into contact with internal components.

To install the DRAM upgrade, follow these steps:

**Step 1** Remove the DRAM DIMMs from the socket by pulling the locking spring clips on both sides of the DIMM holder outward, and tilt the DIMM free of the clips. (See Figure 4.) Be careful not to break the clips on the DIMM connector.

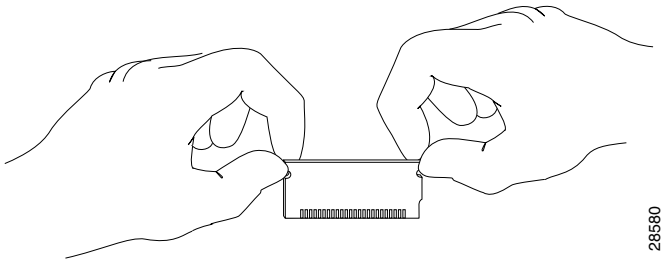
**Note** The Supervisor Engine 1A DRAM uses two DIMMs, one stacked on top of the other. Remove the upper DIMM first, and then remove the lower DIMM.

*Figure 4 Removing the DRAM DIMM*




**Step 2** Hold the DIMM by its edges, gently lift and remove it, and place it on an antistatic mat or foam. (See Figure 5.)

*Figure 5 Handling a DIMM*




**Caution** DIMMs are sensitive components that are susceptible to ESD damage. To prevent ESD damage, handle DIMMs by the edges only; avoid touching the memory modules, pins, or traces (the metal *fingers* along the connector edge of the DIMM). (See Figure 5.)

**Step 3** Remove one upgrade DIMM from the antistatic container.

**Step 4** Hold the DIMM by its edges. (See Figure 5.)

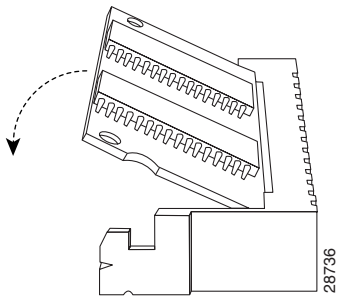
**Step 5** Tilt the DIMM to approximately the same angle as the socket, and insert the connector edge into the socket. Note the notch (key) on the right connector edge of the DIMM. (See Figure 5.) This key assures correct orientation of the DIMM in the socket.

**Note** The Supervisor Engine 1A DRAM uses two DIMMs, one stacked on top of the other. Install the lower DIMM first.

**Caution** When inserting the DIMM, use firm but not excessive pressure. If you damage a socket, you will have to return the supervisor engine to Cisco for repair.

**Step 6** Press the DIMM down until it is secured by the spring clips. (See Figure 6.)

***Figure 6 Installing the DIMM***




**Step 7** When the DIMM is installed, check the two alignment holes and ensure that the spring retainer is visible. If it is not, the DIMM is not seated properly. If the DIMM appears misaligned, carefully remove it and reseat it in the socket. Push the DIMM firmly back into the socket until the retainer springs snap into place.

**Step 8** Repeat Step 3 through Step 7 for the second (upper) DIMM.

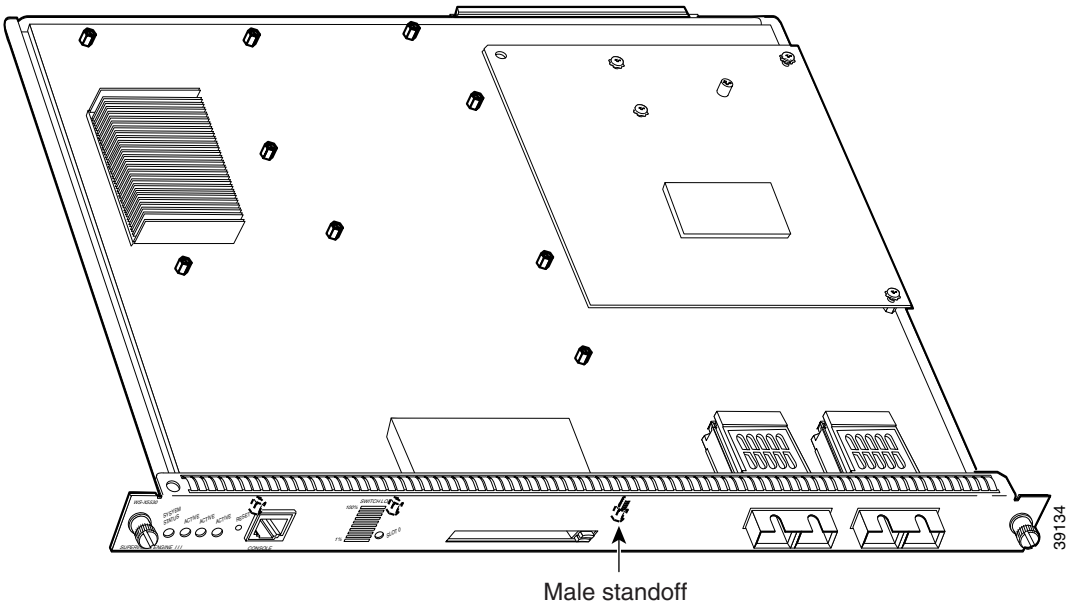
# Installing the MSFC2

**Note** The MSFC2 that shipped after November 2001 is physically smaller than the previous MSFC2.

To install the MSFC2 on the supervisor engine, follow these steps:

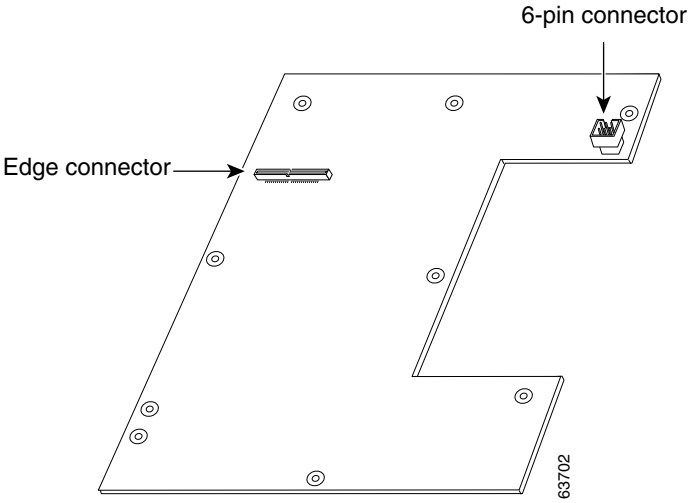
**Step 1** Align the MSFC2 with the standoffs on the supervisor engine. The MSFC2 shipped before November 2001 will also align with the male standoff. (See Figure 7.) Make sure that the remaining mounting holes on the MSFC2 are aligned with the remaining standoffs.

*Figure 7 Male Standoff Location on the Supervisor Engine*




**Step 2** Ensure that the connectors on the MSFC2 (see Figure 8) are aligned with the connectors on the supervisor engine.

*Figure 8 MSFC2 Connectors*




**Step 3** Carefully seat the MSFC2 onto the supervisor engine. (See Figure 9 for an MSFC2 shipped before November 2001 or Figure 10 for an MSFC2 shipped after November 2001.)

**Step 4** Using your thumbs, apply pressure at the connector locations (shown in Figure 9 for an MSFC2 shipped before November 2001 or Figure 10 for an MSFC2 shipped after November 2001) to ensure that the MSFC2 is securely seated on the supervisor engine.

**Caution** Use care not to damage the connectors on the supervisor engine. If you damage a connector, you will have to return the supervisor engine to Cisco for repair.

***Figure 9 MSFC2 Shipped Before November 2001—Seating on the Supervisor Engine 1A***

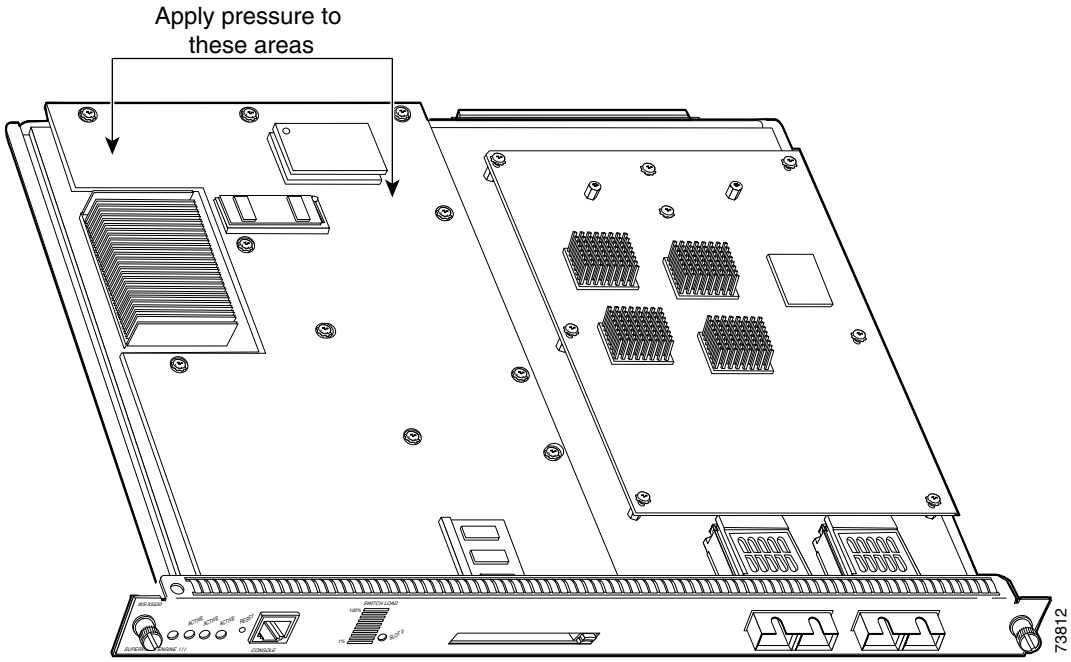
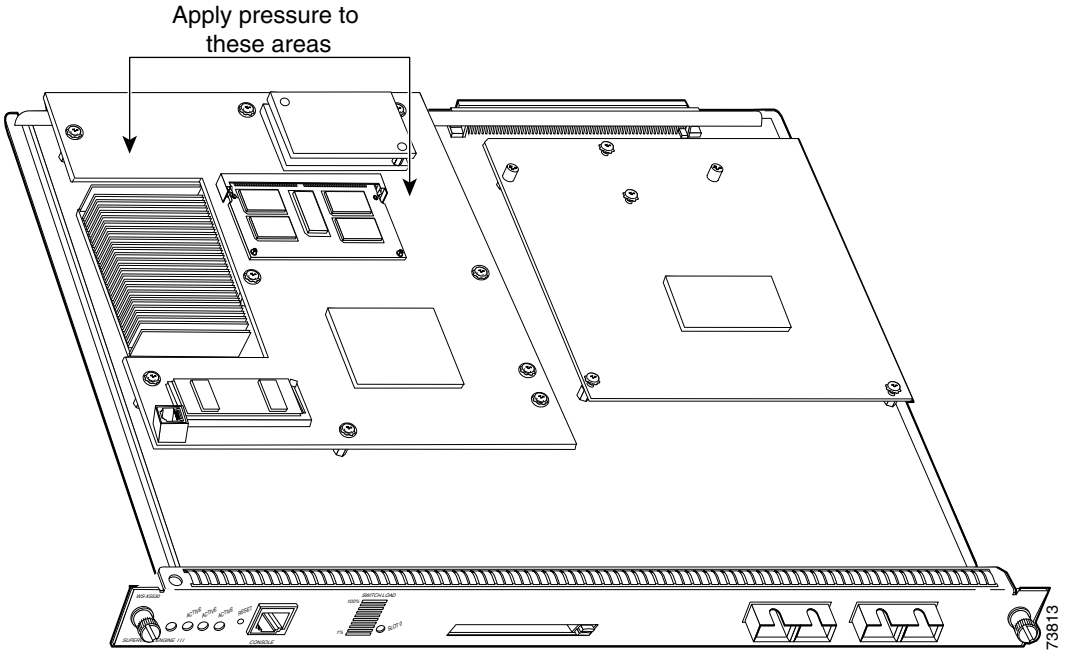



***Figure 10 MSFC2 Shipped After November 2001—Seating on the Supervisor Engine 1A***



**Caution** Ensure that the MSFC2 is securely seated before you install and tighten the securing screws. Using the screws to seat the MSFC2 could warp the card.

**Step 5** Use a Phillips-head screwdriver to install the screws and cap nut (if applicable) that secure the MSFC2 to the supervisor engine. (See Figure 11 for an MSFC2 that shipped before November 2001, or Figure 12 for an MSFC2 shipped after November 2001.)

**Caution** You *must* install the cap nut (if applicable) and all screws. The screws provide grounding between the MSFC2 and the supervisor engine. Failure to install the cap nut and all screws will invalidate the safety approvals and can cause fire and electrical hazards.

***Figure 11 MSFC2 Shipped Before November 2001—Installing the Securing Screws and Cap Nut***

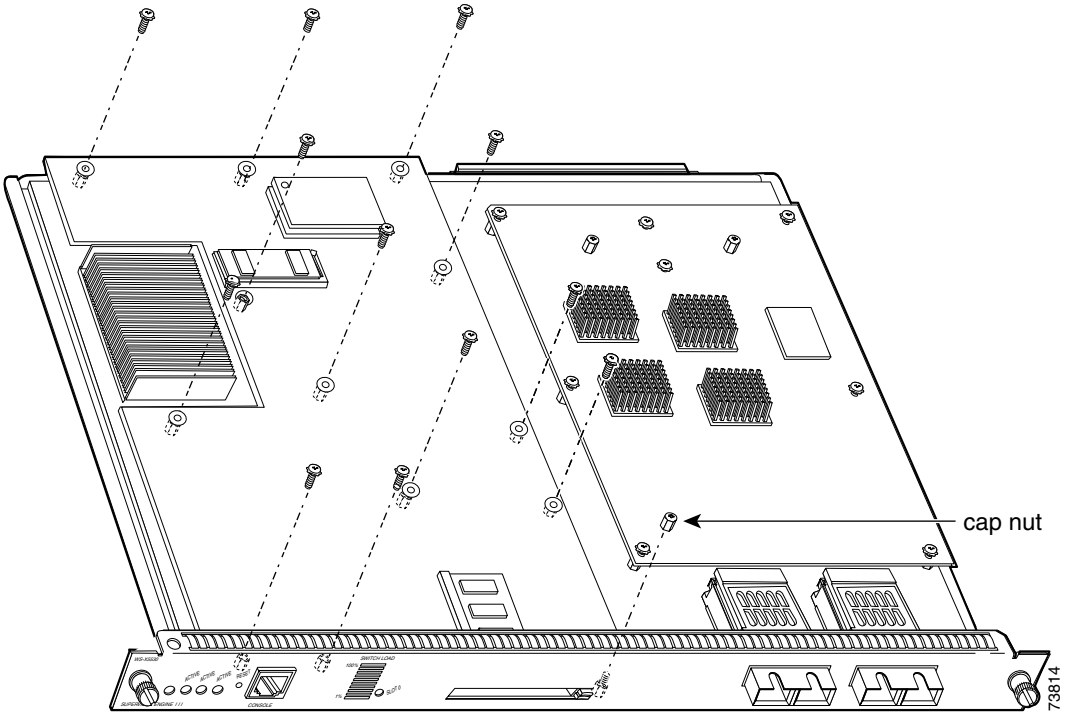
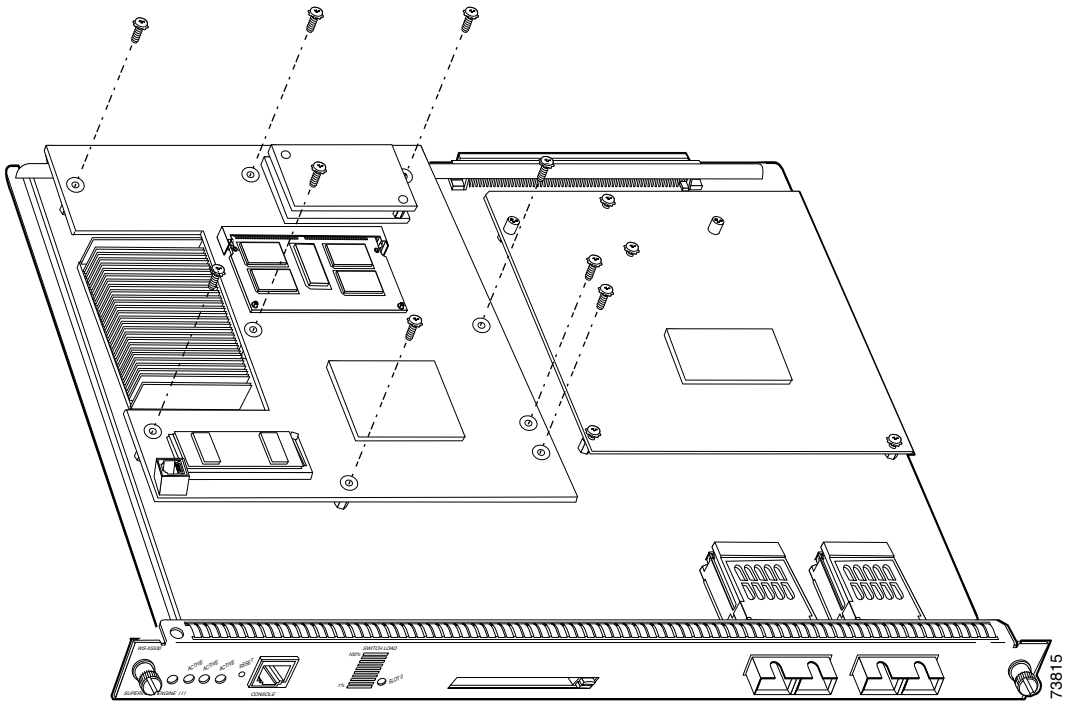


*Figure 12 MSFC2 Shipped After November 2001—Installing the Securing Screws*




**Step 6** Install the supervisor engine in the Catalyst 6500 series switch. (Refer to the *Catalyst 6500 Series Module Installation Guide* for installation instructions.)

**Note** Verify that the supervisor engine STATUS LED is lit. If the STATUS LED changes from orange to green, the supervisor engine has successfully completed the boot process and is now online. If the STATUS LED remains orange or turns red, the supervisor engine has not successfully completed the boot process and may have encountered an error.

**Note** If the LEDs on the supervisor engine front panel are red, remove the supervisor engine, carefully remove the DIMMs, and reseat the DIMMs in the socket. Push the DIMMs firmly back into the socket until the retainer springs snap into place.

If you have redundant supervisor engines, return to Step 2 in the "Removing the MSFC2" section on page 4, and follow the directions to upgrade the redundant supervisor engine.

**Step 7** Enter the **show version** command to verify the amount of memory on the supervisor engine.

This example shows that the total memory is 128 MB on the supervisor engine:

```
Console> show version
...<output truncated>

       DRAM                    FLASH                   NVRAM
Module Total   Used    Free    Total   Used    Free    Total Used  Free
------ ------- ------- ------- ------- ------- ------- ----- ----- -----
2      130944K  57916K  73028K  16384K  12003K   4381K  512K  257K  255K

Console>
```

# Related Documentation

For additional information on Catalyst 6500 series switches and command-line interface (CLI) commands, refer to the following publications:

- *Regulatory Compliance and Safety Information for the Catalyst 6500 Series Switches*
- *Catalyst 6500 Series Switch Installation Guide*
- *Catalyst 6500 Series Swich Module Installation Guide*
- *Catalyst 6500 Series Switch Software Configuration Guide*
- *Catalyst 6500 Series Switch Command Reference*
- *Catalyst 6500 Series Switch IOS Software Configuration Guide*
- *Catalyst 6500 Series Switch IOS Command Reference*

# Obtaining Documentation

Cisco provides several ways to obtain documentation, technical assistance, and other technical resources. These sections explain how to obtain technical information from Cisco Systems.

## Cisco.com

You can access the most current Cisco documentation on the World Wide Web at this URL:

http://www.cisco.com/univercd/home/home.htm

You can access the Cisco website at this URL:

http://www.cisco.com

International Cisco websites can be accessed from this URL:

http://www.cisco.com/public/countries_languages.shtml

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http://www.cisco.com/univercd/cc/td/doc/es_inpck/pdi.htm

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  http://www.cisco.com/en/US/partner/ordering/index.shtml

- Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco Systems Corporate Headquarters (California, USA) at 408 526-7208 or, elsewhere in North America, by calling 800 553-NETS (6387).

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170 West Tasman Drive
San Jose, CA 95134-9883

We appreciate your comments.

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For all customers, partners, resellers, and distributors who hold valid Cisco service contracts, the Cisco Technical Assistance Center (TAC) provides 24-hour-a-day, award-winning technical support services, online and over the phone. Cisco.com features the Cisco TAC website as an online starting point for technical assistance. If you do not hold a valid Cisco service contract, please contact your reseller.

## Cisco TAC Website

The Cisco TAC website (http://www.cisco.com/tac) provides online documents and tools for troubleshooting and resolving technical issues with Cisco products and technologies. The Cisco TAC website is available 24 hours a day, 365 days a year.

Accessing all the tools on the Cisco TAC website requires a Cisco.com user ID and password. If you have a valid service contract but do not have a login ID or password, register at this URL:

http://tools.cisco.com/RPF/register/register.do

## Opening a TAC Case

Using the online TAC Case Open Tool (http://www.cisco.com/tac/caseopen) is the fastest way to open P3 and P4 cases. (P3 and P4 cases are those in which your network is minimally impaired or for which you require product information.) After you describe your situation, the TAC Case Open Tool automatically recommends resources for an immediate solution. If your issue is not resolved using the recommended resources, your case will be assigned to a Cisco TAC engineer.

For P1 or P2 cases (P1 and P2 cases are those in which your production network is down or severely degraded) or if you do not have Internet access, contact Cisco TAC by telephone. Cisco TAC engineers are assigned immediately to P1 and P2 cases to help keep your business operations running smoothly.

To open a case by telephone, use one of the following numbers:

Asia-Pacific: +61 2 8446 7411 (Australia: 1 800 805 227)
EMEA: +32 2 704 55 55
USA: 1 800 553-2447

For a complete listing of Cisco TAC contacts, go to this URL:

http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml

## TAC Case Priority Definitions

To ensure that all cases are reported in a standard format, Cisco has established case priority definitions.

Priority 1 (P1)—Your network is “down” or there is a critical impact to your business operations. You and Cisco will commit all necessary resources around the clock to resolve the situation.

Priority 2 (P2)—Operation of an existing network is severely degraded, or significant aspects of your business operation are negatively affected by inadequate performance of Cisco products. You and Cisco will commit full-time resources during normal business hours to resolve the situation.

Priority 3 (P3)—Operational performance of your network is impaired, but most business operations remain functional. You and Cisco will commit resources during normal business hours to restore service to satisfactory levels.

Priority 4 (P4)—You require information or assistance with Cisco product capabilities, installation, or configuration. There is little or no effect on your business operations.

# Obtaining Additional Publications and Information

Information about Cisco products, technologies, and network solutions is available from various online and printed sources.

- The Cisco Product Catalog describes the networking products offered by Cisco Systems, as well as ordering and customer support services. Access the Cisco Product Catalog at this URL:

  http://www.cisco.com/en/US/products/products_catalog_links_launch.html

- Cisco Press publishes a wide range of general networking, training and certification titles. Both new and experienced users will benefit from these publications. For current Cisco Press titles and other information, go to Cisco Press online at this URL:

  http://www.ciscopress.com

- Packet magazine is the Cisco quarterly publication that provides the latest networking trends, technology breakthroughs, and Cisco products and solutions to help industry professionals get the most from their networking investment. Included are networking deployment and troubleshooting tips, configuration examples, customer case studies, tutorials and training, certification information, and links to numerous in-depth online resources. You can access Packet magazine at this URL:

  http://www.cisco.com/packet

- iQ Magazine is the Cisco bimonthly publication that delivers the latest information about Internet business strategies for executives. You can access iQ Magazine at this URL:

  http://www.cisco.com/go/iqmagazine

- Internet Protocol Journal is a quarterly journal published by Cisco Systems for engineering professionals involved in designing, developing, and operating public and private internets and intranets. You can access the Internet Protocol Journal at this URL:

  http://www.cisco.com/en/US/about/ac123/ac147/about_cisco_the_internet_protocol_journal.html

- Training—Cisco offers world-class networking training. Current offerings in network training are listed at this URL:

  http://www.cisco.com/en/US/learning/index.html

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